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1 RECORD OF ORAL HEARING
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3 UNITED STATES PATENT AND TRADEMARK OFFICE
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6 BEFORE THE BOARD OF PATENT APPEALS
7 AND INTERFERENCES
8

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10 Ex parte SHAHRAM MIHAN
11 and ZHEIKO MAAS
12

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14 Appeal 2009-0870
15 Application 10/506,602
16 Technology Center 1700
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19 Oral Hearing Held: March 18, 2009
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23 Before EDWARD C. KIMLIN, ADRIENE LEPIANE HANLON, and
24 MICHAEL P. COLAIANNI, Administrative Patent Judges
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27 ON BEHALF OF THE APPELLANT:

28

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Appeal 2009-0870
Application 10/506,602

1 The above-entitled matter came on for hearing on Wednesday,
2 March 18, 2009, commencing at 3:05 p.m., at the U.S. Patent and Trademark
3 Office, 600 Dulany Street, Alexandria, Virginia, before Victoria L. Wilson,
4 Notary Public.

5 THE USHER: Calendar number 31. Appeal number 09-0870.
6 Mr. Doughty.

7 MR. DOUGHTY: Good afternoon.

8 JUDGE KIMLIN: Good afternoon. You can begin when you
9 are ready.

10 MR. DOUGHTY: All right. May it please the Board. My
11 name is Jacob Doughty. I represent Shahram Mihan and Zheiko Maas, the
12 Appellants in this matter.

13 Today I would like to talk about -- I'm going to focus my
14 discussion on claim 1, which is the independent claim in this application.
15 Claim 1 is directed to a process for the oligomerization of alpha-olefins in
16 which the alpha-olefins are brought in contact with a particular catalyst.

17 Okay?

18 Now, in this case the catalyst has four particular features and it
19 is the catalyst that is sort of the inventive center of the invention. The
20 catalyst has at least one chromium source.

21 It has at least one ligand, which is 1,3,5-tri-n-dodecyl- 1,3,5-
22 triazacyclohexane, and at least one activator including a boron compound.
23 The boron compound and the chromium compound are present such that
24 there is a ratio of boron to chromium of at least 5. So these are the four
25 central features of the catalyst.

26

1 The Maas reference, which is the primary reference or the only
2 reference that's been cited against the present claims, is the prior work of the
3 present inventors. So the present -- the critically claimed invention is a
4 refinement of prior work that the present inventors had been working on
5 before.

6 Maas discloses chromium compounds. Maas discloses a ligand
7 that's the same ligand that's used in the present claims. Maas discloses boron
8 compounds. And Maas discloses boron to chromium ratios of from 10,000
9 to 1 to 1 to 10.

10 So, basically, what I am trying to say is all the pieces are on the
11 table. The individual components that are claimed in claim 1 are disclosed
12 in Maas. However, there is no specific disclosure of the particular
13 combination of features that is in the present claim 1 and this was
14 acknowledged indirectly by the Examiner in the Reply Brief when the
15 anticipation rejection was withdrawn.

16 So we are talking about whether or not it would have been
17 obvious to select the particular components in claim 1 from the general
18 disclosure of the Maas reference. Okay.

19 So with respect to the Examiner's alleged *prima facie* case of
20 obviousness, the question is whether one of ordinary skill in the art would
21 reasonably expect success in selecting the particular combination of features
22 in claim 1.

23 First, I want to point out that one of ordinary -- to one of
24 ordinary skill in the art, catalysis, catalysts, in general, are very
25 unpredictable.

26 Second, there are numerous combinations of features that are

1 encompassed by Maas -- specific ligands -- the ligand in claim 1 is not the
2 only ligand -- there are several ligands that are possible -- boron, a boron
3 compound is an activating agent.

4 This is an optional component in Maas where it is required in
5 claim 1. And then, finally, the ratios of boron to chromium. Maas covers a
6 universe of different ratios of boron to chromium and we are limiting it to a
7 narrower universe of ratios of 5 or greater.

8 Second, Maas gives mixed signals as to which components
9 would be best in the catalyst. Okay? So, in the examples, there is different
10 combinations of the components that I have talked about in Maas.

11 So while the ligand of claim 1 is identified specifically in Maas,
12 the experimental results in Maas don't indicate that it is the most productive.

13 So, for example, if you look at table 1 in Maas, you can see that
14 other -- catalysts made with other ligands are more productive. Second,
15 while Maas discloses an exemplary catalyst that has a boron to chromium
16 ratio of 10, this exemplar is substantially less productive as a similar catalyst
17 with a boron to chromium ratio of 2.2.

18 So it is showing situations of where boron to chromium ratios
19 outside of the scope of claim 1 are more productive than boron to chromium
20 ratios inside the scope of claim 1.

21 I want to talk a little bit also about the examples in the present
22 application. So there are four examples that are set forth in the back and
23 they are set forth in the table in the present specification.

24 The first example is -- includes a ligand according to claim 1, a
25 chromium compound, a boron compound and a boron to chromium ratio of
26 10, so 10 is within our range of greater than 5.

1 Example 2 is a similar composition with a little bit different
2 additive that's outside of the scope of the claims. Claim 3 is a composition
3 that includes the ligand, boron and chromium as recited in claim 1, however,
4 the boron to chromium ratio is 2. It is outside of the scope of the claim.

5 So example 3 is a comparative example. And example 4,
6 finally, is example 21 from Maas. So this is the specific example from the
7 prior art reference which is included in the specification. And this includes a
8 ligand that is outside the scope of claim 1.

9 It includes a boron compound, a chromium compound, and the
10 boron and chromium compounds are present in an amount that falls within
11 the scope of claim 1.

12 So, basically, claim -- example 3 and example 4 are providing
13 contrasting examples where you are setting something outside of our ligand,
14 and then example 4 where we are setting it outside the boron to chromium
15 ratio. Okay?

16 And, basically, what the results show is that you are having
17 much higher activity with the compounds that are within the scope of the
18 present claims than with the compounds that are outside of the scope of the
19 present claims.

20 So these examples are showing, by focussing on the two
21 variables in Maas, when in combination provide a dramatic improvement in
22 comparison with catalysts where claim 1 is not satisfied. The examples
23 show a great improvement in yield, in one instance a doubling in activity.

24 So by comporting with claim 1, great efficiencies can be
25 achieved in an industrial setting. It would be comforting to have more data
26 showing dozens of data points both inside and outside the scope of claim 1,

1 however, this data is not available in the record and we feel that the data that
2 is available should be given its due weight.

3 We believe that the data in the present specification is
4 representative of the entire scope of claim 1. Moreover, the data shows that
5 the variables disclosed in Maas are not merely interchangeable components
6 and values.

7 One could not reasonably expect, based on the teachings of
8 Maas, that selecting the particular components that are recited in claim 1 will
9 either yield the desirable results that our specification shows.

10 Are there any questions?

11 JUDGE KIMLIN: Pretty straightforward.

12 MR. DOUGHTY: Yeah.

13 JUDGE KIMLIN: I have no questions.

14 JUDGE COLAIANNI: No questions.

15 MR. DOUGHTY: Thank you very much for your time.

16 JUDGE KIMLIN: I heard the evidence.

17 Thank you for coming.

18 MR. DOUGHTY: I think I'm it. You guys have a good
19 afternoon.

20 Whereupon, the proceedings at 3:13 p.m. were concluded.

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